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ABSTRACT

The career exploration program for grades 9 through 10, as part of a comprehensive K through 10 career development program, attempts to develop an awareness of and appreciation for work, extend knowledge of the variety of career opportunities, and provide experiences in career areas of individual interest. The document, a collection of materials consisting of student learning experience packets, instructional materials, and resources, is designed to introduce the students to building and plant maintenance occupations. The introduction defines the career area, and discusses the course objectives, course strategy, and a suggested time table. The activities, organized into objectives, procedures, and resources, cover the areas of: building frames, electrical systems, heating and cooling systems, enclosing exterior and interior walls, maintaining both outdoor and indoor surfaces, individual units for related career exploration, and self-evaluation of career maturity. The appendix contains: suggestions and procedures for both field and exploration trips, forms for exploration trips, and wage rates for construction workers. (JB)

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CAREER EXPLORATION 9 – 10

EXPLORING CAREERS

IN

BUILDING AND PLANT MAINTENANCE

First Edition - 1973

CE003761

CAREER DEVELOPMENT K – 10

CINCINNATI PUBLIC SCHOOLS

ED106589

CAREER EXPLORATION

CINCINNATI PUBLIC SCHOOLS

Grades 9 - 10

EXPLORING CAREERS

IN

BUILDING AND PLANT MAINTENANCE

(Tentative Copy)

First Edition
1973

CAREER DEVELOPMENT

The Career Development Program responds to the needs of students, taxpayers, and employers for the public schools to provide personal, social, and economic relevance in the educational process. It is an integral part of the educational process essential to the development of all students.

The Career Development components, which are Career Motivation (K-6), Career Orientation (7-8) and Career Exploration (9-10), develop an awareness and appreciation for work, extend knowledge of the variety of career opportunities, and provide experiences in career areas of individual interest. These goals are accomplished through a curriculum based on pupil activities involving simulation, role playing, and individual investigation. These activities require that administrators and teachers develop a new level of working relationships with community resources such as public institutions, business, labor, and industry.

Every individual's right to learn what he or she needs in order to be a producing, participating member of society is a fundamental responsibility of education. Each individual also has a right to self-fulfillment. Career Development, presented as inseparable elements inherent within every level and subject area of the school curriculum, provides each student with the skills and insights to recognize and pursue goals of personal significance. As a result of this program students will increase their abilities to make well-informed and experience-based decisions related to their personal life, school program, and career selection.

Donald R. Waldrip, Superintendent
Cincinnati Public Schools

CAREER EXPLORATION

Career Exploration is the 9th and 10th grade component of the Career Development Program. Its primary goal is to provide experiences related to career areas chosen by the student. Focus is on the student's perception of himself or herself in relation to the real world of career opportunities. Emphasis is on individualized and personalized activities and experiences.

The student chooses and studies a specific career area using skills and insights gained in earlier parts of the Career Development Program. Students explore occupations within the chosen area with particular attention to those most closely related to their own needs, interests, and abilities. They will experience some of the satisfactions, opportunities, limitations and frustrations peculiar to the various occupations.

Career Exploration is planned as the culmination of the Career Development Program. Successful exploratory experiences will enable the student to formulate and refine realistic and personally meaningful career goals. These experiences will also provide a basis for planning a course of studies in the 11th and 12th grades (and beyond) pursuing career goals.

Stanley A. Marsh

Stanley A. Marsh
Administrative Assistant to
the Superintendent

FOREWORD

This manual is one of a series produced by the Cincinnati Public Schools as a part of a project designed to provide Career Exploration for students in grades 9 and 10.

It is designed to provide activities and information about an occupational area that will provide a more in-depth study than presented in Career Orientation in grades 7 and 8.

This is a tentative guide and has been developed for the purpose of field testing and revising based upon feedback from participating teachers.

This manual was developed by Jack R. Bongey, an industrial arts teacher at Schwab Junior High School; Jack D. Ford, an instructional consultant, conducted the curriculum project under the general supervision of Ralph E. Shauck, Coordinator of Instructional Services.

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I. INTRODUCTION

A. Definition of Career Area

The building trades constitute our nation's largest industry. Construction work provides one out of every ten jobs in the United States, which represents about one-sixth of all our industrial workers. As in all industries, careers in construction include occupations in management, personnel, production and maintenance.

B. Course Objectives

The Building and Plant Maintenance Exploration Course should help the student attain:

1. An identity with a variety of careers in construction and maintenance.
2. Basic manipulative skills and desirable work habits.
3. The ability to cooperate with fellow workers, employers or customers.
4. An appreciation of quality workmanship and a positive, healthy attitude toward the world of work.
5. Knowledge of the importance of performing jobs in an orderly, organized fashion.
6. Self-confidence and initiative.
7. The ability to evaluate this career in terms of its appeal to the student.

A very wise and successful man once said, "A person who has a trade has an estate." Many people think of an estate as an accumulation of considerable property and wealth. However, the most valuable possession most people will gain are the skills and knowledge they acquire in their trade or profession.

There are many possibilities for careers in the construction industry and at all levels of ability and training. This guide will be concerned with fifty-one roles ranging from a janitor to a contractor. To work with your hands and your mind is perhaps the prime requisite to success in the construction field.

C. Course Strategy

Building and Plant Maintenance careers which are to be explored by the students are organized into activities. These activities are arranged systematically so the end result will be a finished project, namely, a utility shed.

The student will explore individually, by group, or by class in certain activities. This course will mainly be of a shop nature with

the many roles portrayed as are found in the construction industry. However, films and other teaching aids will be used as supplements to assist the teacher in presenting various facets of the vocations. The guide encourages the use of many resources, but the teacher, based on his own experiences, will want to make use of other sources and other media for planning and instruction.

A special experience being planned for students in every career is a small group exploration trip. Effort has been made to make this as simple as possible for the classroom teacher. See Appendix B.

The last exploration activity in this course will ask each student to participate in a "Self Evaluation of Career Maturity" and will provide each student an opportunity to analyze and discuss their career-related experiences.

D. Suggested Time Schedule

No.	EXPLORATION ACTIVITY	DAYS
1.	Introduction to the Course	1
2.	Use of D.O.T.	1
3.	Building Frames	9
4.	Electrical Systems	5
5.	Plumbing Systems	5
6.	Heating and Cooling Systems	3
7.	Enclosing Exterior Walls	5
8.	Enclosing Interior Walls	4
9.	Maintaining Outdoor Surfaces	5
10.	Maintaining Indoor Surfaces	4
11.	Conclusion of Building and Maintenance Activities	1
12.	Individual Exploration of Related Careers	variable
13.	Self Evaluation of Career Maturity	2

II. Career Exploration Activities

A. Where to Begin --

1. Resources essential to pupil activities: Many resources listed on the following pupil activity sheets must be made available in the classroom before the students can begin the activities noted. These essential resources are specified IN WORDS on each exploration activity worksheet. THEY MUST BE OBTAINED BY THE TEACHER IN ADVANCE OF THE CLASS MEETING.

Examples:

a. Films

If . . . the worksheet reads:

	RESOURCES
	Film: Code Blue (C-7)

Then . . . The teacher must look in Appendix C, Item 7 for catalog information so that this film can be ordered in time for this activity.

b. Material to be duplicated by the teacher for use in class.

If . . . the worksheet reads:

	RESOURCES
	See Analysis Quiz (B-4,5,6)

Then . . . The teacher must duplicate a class set of this item which is found in Appendix B as items 4, 5, and 6. Duplication can be achieved by Xeroxing, generating a ditto master via photocopying with IBM 107 and Thermofax or retyping onto a ditto master.

2. Optional resources to be used for enrichment, supplements and student or teacher reference are described only in the Appendix.

If . . . the worksheet reads:

	RESOURCES
	C-8

Then . . . This indicates that for this activity there is a potentially useful reference described in Appendix C, Item 8. This reference item is not essential to the completion of the student activity.

EXPLORATION ACTIVITY (INTRODUCTORY) (2 day)

INTRODUCTION TO COURSE

OBJECTIVES	ACTIVITIES	RESOURCES
Students will be able to: 1. Discuss critically the objectives of the course. 2. Question people's attitude at work under various conditions as illustrated in a film. 3. Form a general understanding of the course outline and procedure. 4. Form some basic conclusions through the "self-analysis quiz." 5. List and discuss at least 4 important factors of good on-the-job performance. 6. Describe a wide variety of skills needed for specific jobs in this occupational area.	1. The student will be informed of the purpose of this course, what is hoped to be accomplished, and will be led into a discussion of activities involved in Career Exploration. 2. The student will defend or reject by role playing, the position of maintaining good personal appearance, attitude and conduct on the job. 3. Explain to students the relation of the course and the "Self-Analysis Quiz" to their career selection. Students will participate in this self-analysis quiz. 4. Hand out and discuss a "Job-Performance Rating Sheet" which will be administered and discussed as part of the last exploration activity in this course.	Class set of "Self-Analysis Quiz" (attached) Class set of "Job Performance Rating Sheet" (attached) "What Do We Look Like To Others" 16 mm film, 10 min., Sandler Instructional Films, Inc. Board of Education.

SELF-ANALYSIS QUIZ

Directions: Check the line closest to the statement that identifies you. If you are uncertain, check the middle space.

Make at least average grades	____ ____ ____	Make below average grades
Learn quickly	____ ____ ____	Learn slowly
Enjoy reading books, magazines, etc.	____ ____ ____	Enjoy reading comics
Like school and do extra work	____ ____ ____	Do only schoolwork that is necessary
Talk and write well	____ ____ ____	Talk and write poorly
Good planner and organizer	____ ____ ____	Poor planner and organizer
Like children	____ ____ ____	Dislike children
Patient with children's questions	____ ____ ____	Impatient with children's questions
Outgoing	____ ____ ____	Withdrawn
Popular	____ ____ ____	Not popular
Have large group of friends	____ ____ ____	A few close friends
Have confidence	____ ____ ____	Unsure around others
Give advice	____ ____ ____	Not asked for advice
Outspoken	____ ____ ____	Quiet
Sensitive to others	____ ____ ____	Insensitive to others
Trust people	____ ____ ____	Do not trust people
Volunteer	____ ____ ____	Do not volunteer
Pleasant personality	____ ____ ____	Do not have pleasant personality
Have a sense of humor	____ ____ ____	"Touchy"
Not prejudiced	____ ____ ____	Prejudiced

JOB PERFORMANCE RATING SHEET

NAME: _____ DATE: _____

DEPT. _____ OPERATION: _____

	EXCELLENT	GOOD	FAIR	POOR
Attendance & Punctuality				
Quality of work				
Production				
Initiative				
Cooperation with instructor				
Cooperation with other students				
Interest in job				
Meets industrial quality standards				

If the student rates "poor" on any factor

or

If the student rates "fair" on more than three factors:

Discuss with the student the areas in which he or she will need to improve, before he can attain success in his chosen field.

Remarks: _____

_____

_____

EXPLORATION ACTIVITY #2

Use of the D.O.T. (Dictionary of Occupational Titles)

The D.O.T. lists 35,550 jobs with a code number for each. The last three digits of this code refer to the relationship of that job to data, people and things. This exploration activity provides the students some experience in using this information to identify jobs which match their interests.

OBJECTIVES	ACTIVITIES	RESOURCES
The student will be able to: Compare their knowledge about the data, people, things content of jobs to factual information listed in the D.O.T. for five jobs of personal interest.	The teacher will conduct a classroom discussion on the D.O.T. code number in identifying the data, people, things orientation of jobs. (See the attached page for examples.) Following this discussion each student is to complete the "D.O.T. Worksheet" which compares the student's estimate of the data, people, things job content to that listed in the D.O.T.	Dictionary of Occupational Titles, Volumes I and II Make a class set of "Examples of D.O.T. Code Usage." Make a class set of the "D.O.T. Worksheet"

D.O.T. WORKSHEET

STEP 1. In table I at the bottom of this page, write the names of five jobs which are interesting to you.

STEP 2. Use the handout sheet titled "Examples of D.O.T. Code Usuage" and make an estimate of the correct code to describe this job. Record this estimate in Table I.

STEP 3. Use Volume I or II of the D.O.T. and look up the D.O.T. code designation for each job. Compare these designations to your estimate.

TABLE I

	NAME OF JOB	STUDENT'S ESTIMATE OF THE CORRECT CODE	D.O.T. CODE DESIGNATION
1.	_____	XXX._ _ _	_____
2.	_____	XXX._ _ _	_____
3.	_____	XXX._ _ _	_____
4.	_____	XXX._ _ _	_____
5.	_____	XXX._ _ _	_____

EXAMPLES OF D.O.T. CODE USAGE

JOB TITLE	D.O.T. CODE	D.O.T. CODE MEANING
High School Teacher	091.228	
		(Things) 8 - No significant relationship
		(People) 2 - Instructing
		(Data) 2 - Coordinating
Waitress	311.878	
		(Things) 8 - No significant relationship
		(People) 7 - Serving
		(Data) 8 - No significant relationship
Stock Clerk	223.387	
		(Things) 7 - Handling Things
		(People) 8 - No significant relationship
		(Data) 3 - Compiling
Auto Mechanic	620.281	
		(Things) 1 - Precision working
		(People) 8 - No significant relationship
		(Data) 2 - Analyzing data

DATA (4th digit)

0 Synthesizing
1 Coordinating
2 Analyzing
3 Compiling
4 Computing
5 Copying
6 Comparing
7 No significant relationship
8

PEOPLE (5th digit)

0 Mentoring (Counseling)
1 Negotiating
2 Instructing
3 Supervising
4 Diverting
5 Persuading
6 Speaking-Signaling
7 Serving
8 No significant relationship

THINGS (6th digit)

0 Setting-Up
1 Precision Working
2 Operating-Controlling
3 Driving-Operating
4 Manipulating
5 Tending
6 Feeding-Offbearing
7 Handling
8 No significant relationship

For a definition of the above see pages 649 and 650 in Appendix A of the Dictionary of Occupational Titles Volume II.

EXPLORATION ACTIVITY #3

Building Frames (9 days)

OBJECTIVES	ACTIVITIES	RESOURCES
The student will be able to: 1. Name and identify 5 tools needed to construct a framed section. 2. List and describe the roles of selected persons in the building construction industry. 3. Compute lumber and materials cost to determine the cost of a wooden framed unit. 4. Upon being given a visual media the student will question people's attitudes at work under various conditions. 5. Identify those tasks related to steel framing, when given a list of 10 construction tasks related to both wood and steel framing.	1. Given tools and materials along with a demonstration & 2. and lecture, students will build a framed section in 9 assigned periods. Suggested Activity Divide class into six groups and build a 6' x 8' x 8' "Little Red School House Utility Shed". (This unit could be sold at a PTA Meeting as another activity.) The group could break down and work on the sides, front, back, floor and roof; however, it should be kept in mind the unit will be dismantled into sections. 3. Given an exploration trip or assignment to a role model, those students who can make a contact or are assigned, should spend a minimum of one hour on a job or talking with persons who are working with occupations described in the simulation. Suggest four students to be out of class each day. 4. Given the size and amount of lumber needed to construct the back of the framed section, the student will calculate the cost of the lumber in that unit. Note: This activity is related to the work of the contractor. 5. The students will defend or reject, by role playing, the position of maintaining good personal appearance, attitude, and conduct on the job using the attached job description. 6. Given a film on steel framing, the student will distinguish between wood and steel framing.	"The World of Construction" Lab Manual, Textbook, and Teacher's Guide, McKnight Publishing 1970. Suggested sketches for a utility shed follow the roles. Mr. Kerry Rice Allied Construction Indus. 221-8020 "Exploration Trip Report" and "Exploration Trip Permission Forms" (Appendix B, C, and D) Illustrations of house construction details and roofing details follows the roles. "What Do We Look Like to Others" 16 mm film, 10 min. Sandler Instructional Films, Inc. Resource Services "Erecting Steel" Modern Talking Picture. 16 mm film.

ROLES AND JOB DESCRIPTIONS RELATED TO BUILDING FRAMES

1. Role: Contractor, Construction (182.168) page 161.

   Job Description:

   Contracts to perform construction work. Makes own estimate of cost of work and submits bid. Makes arrangement with banks or other parties to provide financial assistance. Purchases materials for construction. Supervises work directly or delegates authority to foremen.

2. Role: Carpenter Foreman (860.131) page 101.

   Job Description:

   Supervises and coordinates activities of workers engaged in construction, installation and repair of wooden structures and fixtures. Examines blue prints, selects materials, and determines sequence of activities concerned with fabrication, assembly and erection of structure. Assigns workers to such tasks as cutting material to size, erecting framework, and laying floors.

3. Role: Rough Carpenter (860.781) page 102.

   Job Description:

   Builds rough wooden structures, such as concrete forms, scaffolds, tunnel and sewer supports, and temporary frame shelters, according to sketches or oral instructions.

4. Role: Finishing Carpenter (860.381) page 101.

   Job Description:

   Constructs, erects, installs and repairs structures and fixtures of wood, plywood, and wallboard. Uses carpenter's hand tools and power tools, conforming to local building codes. Often specializes in installing interior and exterior trim, building stairs and laying hardwood floors. Studies blueprints, sketches, or building plans for information pertaining to types of material required.

5. Role: Carpenter Helper (860.887) page 405.

   Job Description:

   May be referred to as carpenter apprentice. Assists carpenter to build wooden structures. Selects and saws new and used lumber to specific size. Holds lumber in position for nailing by carpenter. Nails sheathing to studs after structure has been framed.

6. Role: Laborer, Carpentry (860.887) page 405.

   Job Description:

   Cleans used lumber and wooden and metal forms. Removes shoring and bracing from forms. Conveys materials and tools about job site. Digs shallow

holes or trenches to support posts.

7. Role: Carpenter Inspector (860.281) page 101.

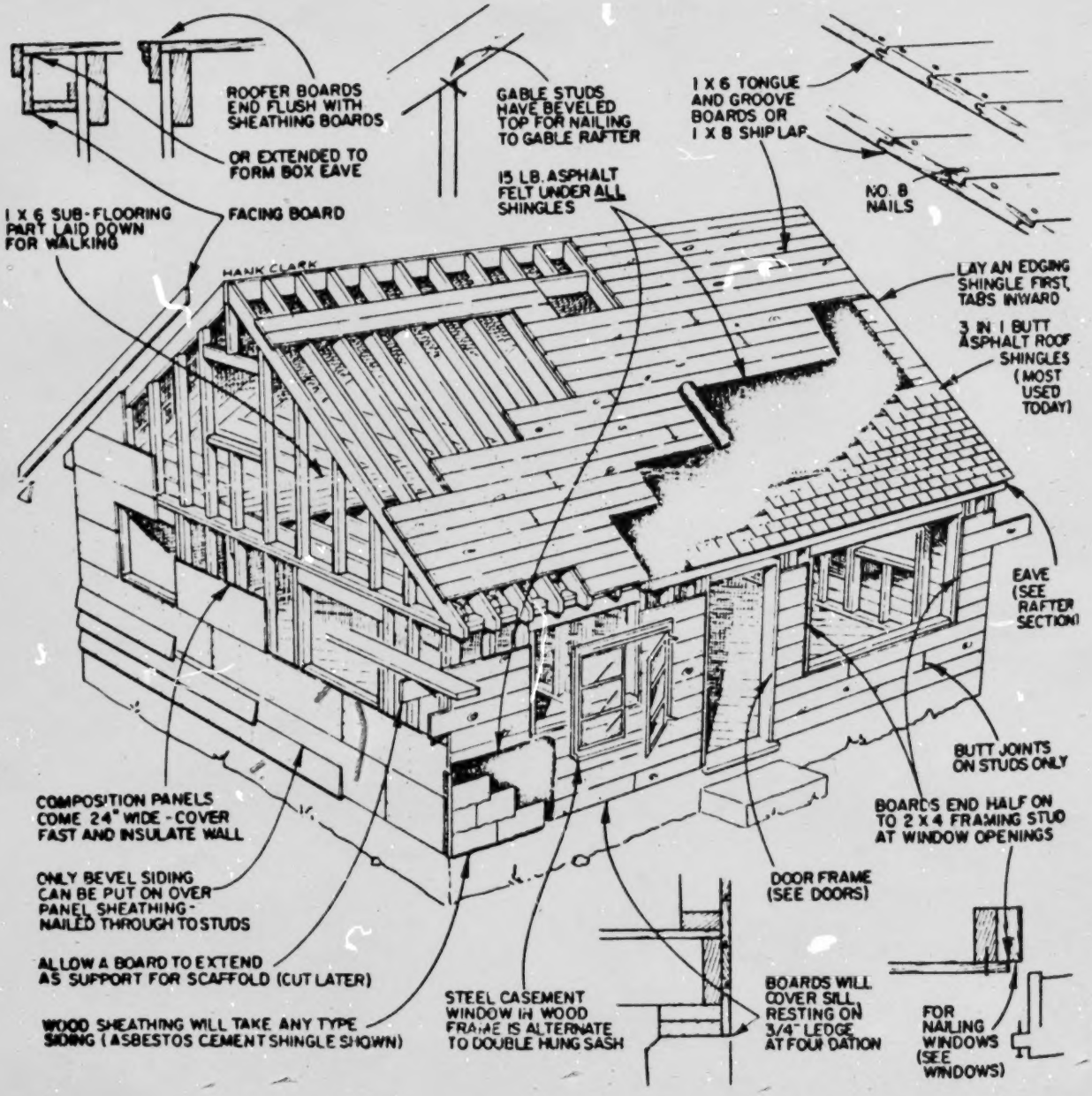
Job Description:

Inspects buildings, desks, cabinets, tables, and other wooden structures to insure specified standards of maintenance. Reports nature and extent of repairs needs or directs maintenance carpenter to make repairs.

8. Role: Maintenance Carpenter (860.281) page 101.

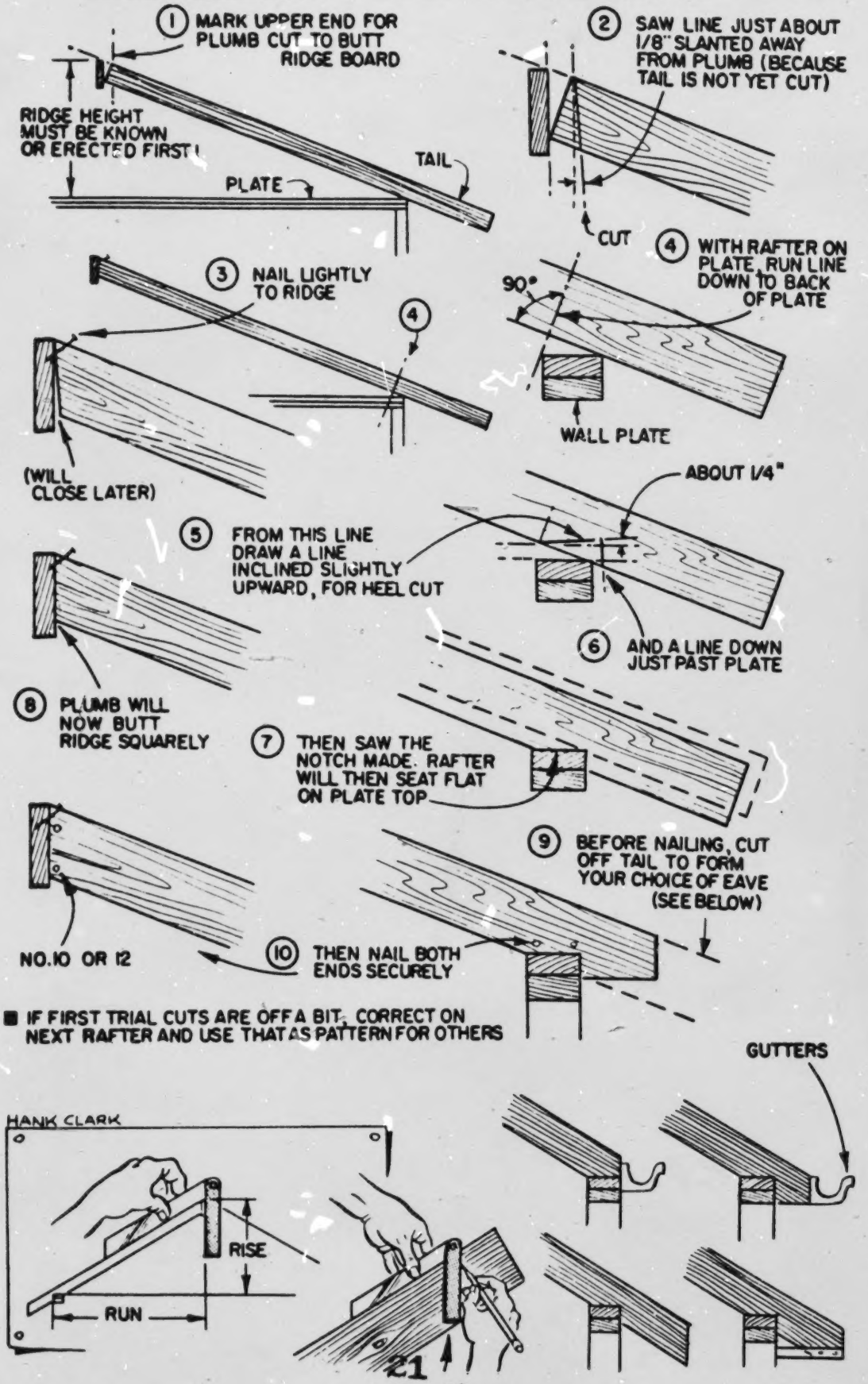
Job Description:

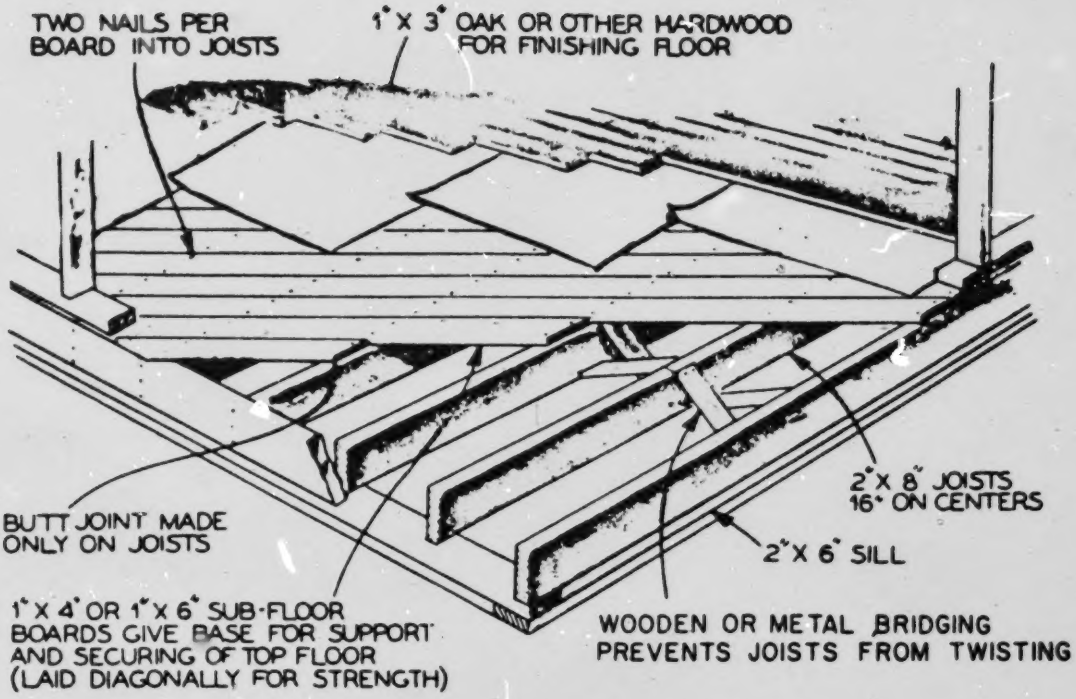
Repairs structural woodwork and equipment in an establishment, working from blue prints, drawings or oral instructions. Replaces damaged ceiling tile, floor tile and sheet plastic wall covering. May build cabinets and other wooden equipment in carpenter shop, using woodworking machines, such as circular saw, bandsaw, and jointer.


ROOFER BOARDS END FLUSH WITH SHEATHING BOARDS
OR EXTENDED TO FORM BOX EAVE
FACING BOARD
1 X 6 SUB-FLOORING PART LAID DOWN FOR WALKING
GABLE STUDS HAVE BEVELED TOP FOR NAILING TO GABLE RAFTER
15 LB. ASPHALT FELT UNDER ALL SHINGLES
1 X 6 TONGUE AND GROOVE BOARDS OR 1 X 8 SHIP LAP
NO. 8 NAILS
HANK CLARK
LAY AN EDGING SHINGLE FIRST, TABS INWARD
3 IN 1 BUTT ASPHALT ROOF SHINGLES (MOST USED TODAY)
EAVE (SEE RAFTER SECTION)
BUTT JOINTS ON STUDS ONLY
BOARDS END HALF ON TO 2 X 4 FRAMING STUD AT WINDOW OPENINGS
COMPOSITION PANELS COME 24" WIDE - COVER FAST AND INSULATE WALL
ONLY BEVEL SIDING CAN BE PUT ON OVER PANEL SHEATHING - NAILED THROUGH TO STUDS
ALLOW A BOARD TO EXTEND AS SUPPORT FOR SCAFFOLD (CUT LATER)
WOOD SHEATHING WILL TAKE ANY TYPE SIDING (ASBESTOS CEMENT SHINGLE SHOWN)
STEEL CASEMENT WINDOW IN WOOD FRAME IS ALTERNATE TO DOUBLE HUNG SASH
DOOR FRAME (SEE DOORS)
BOARDS WILL COVER SILL RESTING ON 3/4" LEDGE AT FOUNDATION
FOR NAILING WINDOWS (SEE WINDOWS)

HOUSE CONSTRUCTION DETAILS

SIMPLE METHOD OF FINDING THE TWO CUTS ON ALL COMMON RAFTERS


1 MARK UPPER END FOR PLUMB CUT TO BUTT RIDGE BOARD
RIDGE HEIGHT MUST BE KNOWN OR ERECTED FIRST!
PLATE
TAIL
2 SAW LINE JUST ABOUT 1/8" SLANTED AWAY FROM PLUMB (BECAUSE TAIL IS NOT YET CUT)
CUT
3 NAIL LIGHTLY TO RIDGE
4
(WILL CLOSE LATER)
4 WITH RAFTER ON PLATE, RUN LINE DOWN TO BACK OF PLATE
90°
WALL PLATE
5 FROM THIS LINE DRAW A LINE INCLINED SLIGHTLY UPWARD, FOR HEEL CUT
ABOUT 1/4"
6 AND A LINE DOWN JUST PAST PLATE
8 PLUMB WILL NOW BUTT RIDGE SQUARELY
7 THEN SAW THE NOTCH MADE. RAFTER WILL THEN SEAT FLAT ON PLATE TOP
9 BEFORE NAILING, CUT OFF TAIL TO FORM YOUR CHOICE OF EAVE (SEE BELOW)
NO.10 OR 12
10 THEN NAIL BOTH ENDS SECURELY
■ IF FIRST TRIAL CUTS ARE OFF A BIT, CORRECT ON NEXT RAFTER AND USE THAT AS PATTERN FOR OTHERS
GUTTERS
HANK CLARK
RISE
RUN
21


TWO NAILS PER BOARD INTO JOISTS
1" X 3" OAK OR OTHER HARDWOOD FOR FINISHING FLOOR
2" X 8" JOISTS 16" ON CENTERS
2" X 6" SILL
BUTT JOINT MADE ONLY ON JOISTS
1" X 4" OR 1" X 6" SUB-FLOOR BOARDS GIVE BASE FOR SUPPORT AND SECURING OF TOP FLOOR (LAID DIAGONALLY FOR STRENGTH)
WOODEN OR METAL BRIDGING PREVENTS JOISTS FROM TWISTING

FLOOR CONSTRUCTION IN AVERAGE WOOD FRAME DWELLING

Architects' Plans For Storage

Storage for garden tools, etc., or a playhouse, this nice little colonial is easy to build. 10'x12'. Sidewalls 6'-4" and 4'-4". Door width 42". Plywood siding. Wood floor framing is above ground, anchored for wind, also conc. slab details. Plans are for the amateur, including nail sizes and location, full size rafter patterns, material list & instructions. Plan No. C1012. $2.50 a set. C. E. Handloser, Dept. WB, 2032 W. Needle Drive Traverse City, Mich. 49684.

SUGGESTED DESIGNS FOR THE FRAMED SECTION

EXPLORATION ACTIVITY #4

Electrical Systems (5 days)

OBJECTIVES	ACTIVITIES	RESOURCES
The student will be able to: 1. Demonstrate familiarity with the National Code Electric Regulations. 2. Identify and use the tools, equipment and supplies needed to install a 110 volt circuit. 3. Inspect and recognize any faulty wiring in a given situation. 4. Justify the reasons for the installation of a 220 volt system over a 110 volt system. 5. Construct a circuit and to read an electric meter. 6. Contrast careers in electrical with careers in other construction industries.	1. Given the National Electric Code Regulations, the student will be able to apply the code in all activities in this unit. 2. Given tools, equipment, and supplies, the student will install a 110 volt switch inside light and outside floodlight (waterproof) in the framed section. 3. In an Electrical Complaint Inspector role, the student will inspect the wiring by using an Electrical Inspection Sheet. (See Job Descriptions which follow) 4. Install a 220 volt outlet on a 4' x 4' panel. 5. Given a lecture and demonstration, the student will install a meter receptacle and service entrance on meter board. 6. Lecture and discussion on electrical careers by a representative of Cincinnati Gas and Electric Company.	"National Electric Code" National Fire Protection Agency, 60 Battery March Street, Boston, Mass. 02110 "Wiring Simplified" H.P. Richter, Park Pub. Co., Minn., Minn. 1972 A suggested inspection sheet follows the roles. Contact Nadine Cox Cinti. Gas and Electric 632-2768 for meters, sockets and outlets.

ROLES AND JOB DESCRIPTIONS RELATED TO ELECTRICAL SYSTEMS

1. Role: Electrical Engineer (003.087) Pg. 237

   Job Description:

   Plans construction and coordinates operation of power stations, transmission lines, and distribution systems. Prepares drawings and specifies type of equipment and material to be used. Computes power rates and assists others in evaluating properties and developing utility systems in new territories.

2. Role: Electrical Foreman (829.131) Pg. 238

   Job Description:

   Supervises and coordinates activities of electrical repairmen and electricians engaged in construction, maintenance, and repair of electrical power, lighting, and communication systems of buildings.

3. Role: Electrical Lineman (821.381) Pg. 424

   Job Description:

   Erects wood poles and prefabricated light duty metal towers, cable and related equipment to construct transmission and distribution powerlines used to conduct electrical energy between generating stations, substations and consumers.

4. Role: Electrician, Wireman (824.281) Pg. 240

   Job Description:

   Plans layout and installs and repairs wiring, electrical fixtures, apparatus and control equipment. Prepares sketches or follows diagrams or blueprints prepared by others, insuring that concealed wiring is installed before completion of future walls, ceilings, and flooring.

5. Role: Electrician Helper (829.887) Pg. 241

   Job Description:

   Assists electrician with measuring, cutting and bending wire and conduit, using ruler, and handtools, such as pipe benders and hacksaw. Drills holes for wiring and assists in lifting, positioning, and fastening objects. Performs minor repair such as replacing fuses and light switches.

6. Role: Electrical Complaint Inspector (829.281) Pg. 239

   Job Description:

   Locates cause of defective electric service on customers' premises and repairs wiring and connections. May recommend new wiring arrangement to correct inadequancies.

7. Role: Electric Meter Installer (821.381) Pg. 242

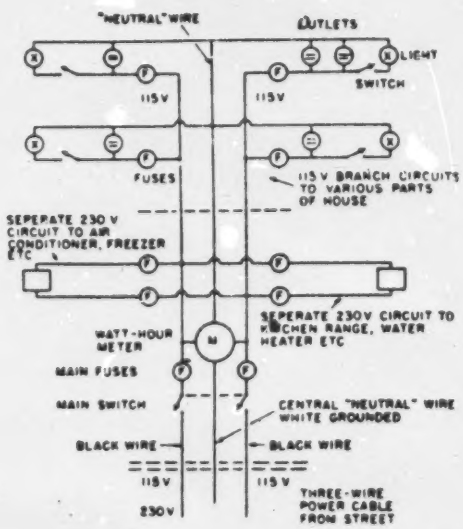
Job Description:

Installs and removes electric meters on customers' premises. Sets recording mechanism, tests meters for flow of current, and reads meter after installation and before removal.

ELECTRICAL INSPECTION
CHECK LIST

ITEMS TO BE CHECKED	APPROVED	REJECTED
1. Are all wires 14 gauge or larger?	____	____
2. Is the wire stapled within 8" of each outlet or receptacle?	____	____
3. Are all boxes in a location to be grounded?	____	____
4. Drilled holes should be a minimum of 1" from the edge of a stud.	____	____
5. Only one set of wires should pass through each hole in the studs.	____	____
6. Conduit should be a minimum of 1/2" dia. and secured by clamps.	____	____
7. Armored cable should be insulated on the inside.	____	____
8. Have the holes been drilled in the correct location?	____	____
9. Are junction and outlet in the proper location as shown by the drawing and specifications?	____	____
10. Conduit bends are free from kinks.	____	____

Basic Three Wire Power System from the street to a house. It will supply both 110 and 220 volt conveniences.



EXPLORATION ACTIVITY #5

Plumbing Systems (5 days)

OBJECTIVES	ACTIVITIES	RESOURCES
The student will be able to: 1. Recognize the different kinds and sizes of pipe and pipe fittings. 2. Identify and use basic tools for repairing plumbing fixtures and installations. 3. Relate the Plumbing Code Regulations to the activities. 4. Apply specified safety precautions plumbers should use. 5. Differentiate the correct pipe, tubing, valves and fittings given in a set of 5 room house plans.	1. Given the basic plumbing equipment, combined with a demonstration the student will: a. Install an outside water faucet hook-up on the framed section. b. Install a galvanized drain line, with trap on 2 x 4 framing. c. Cut a 2 ft. piece section off a $1\frac{1}{2}$" galvanized pipe and thread the pipe 1" back from each end. d. Install with the proper copper pipe and tubing, hot and cold water lines on the 2 x 4 framing. e. Install with the proper plastic pipe and hot and cold water lines on the 2 x 4 framing. 2. Students will role play jobs as described on the attached pages. Each student will experience each role at least once during the simulation. 3. Given the house plans, the student will estimate the amount of pipe, sizes and type of pipe materials to be used.	"The World of Construction" McKnight Publish. Text, Lab Manual, and Teacher Guide, 1970. "Plumbing and Heating" Richard Day, Fawcett Pub. Co., Rockville, Md. 1970 House plans to be obtained by the teacher from: Pease Homes Pease Co., 900 Forest Hamilton, O. 45012 A typical plumbing system follows the roles.

ROLES AND JOB DESCRIPTIONS RELATED TO PLUMBING SYSTEMS

1. Role: Plumber Foreman (862.131) Pg. 544

   Job Description:

   Supervises and coordinates activities of workers engaged in the assembly, installation and repair of pipes, fittings and fixtures of heating, water supply and waste disposal systems for buildings.

2. Role: Plumber (862.381) Pg. 544

   Job Description:

   Assembles, installs and repairs pipes, fittings and fixtures of heating, water, and drainage systems. Studies building plans and working drawings to determine work aids required and sequence of installations. Assembles and installs valves, pipe fittings and pipes composed of iron, steel, brass, lead, copper and plastic using hand tools and power tools.

3. Role: Pipe Fitter (862.381) Pg. 534

   Job Description:

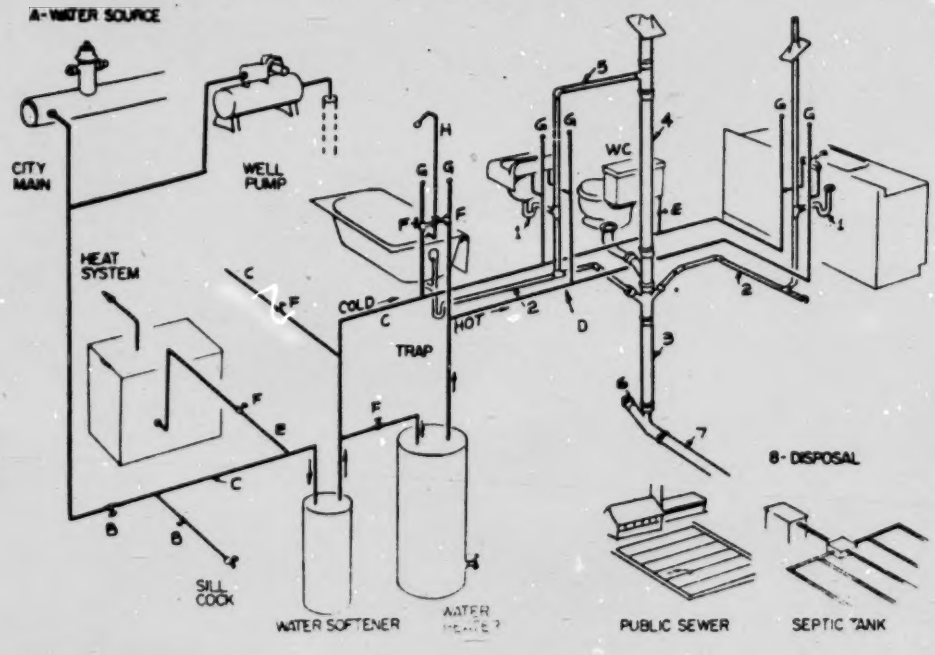
   Lays out, fabricates, assembles, installs and maintains piping and piping systems, fixtures, and equipment for steam, hot water, heating, cooling, lubricating and industrial processing system on the basis of knowledge of system operation and study of building plans or working drawings.

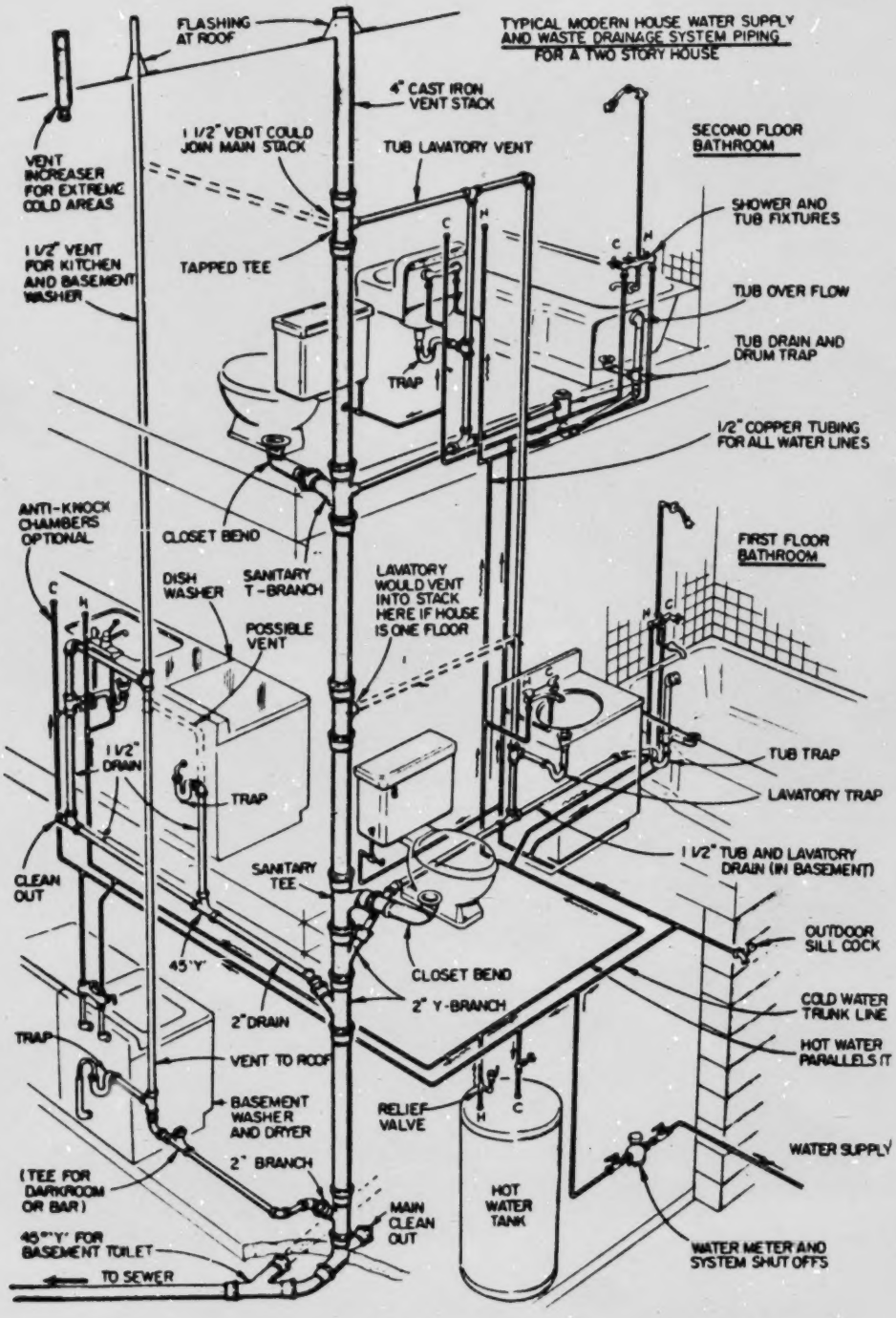
4. Role: Pipe Cutter (862.381) Pg. 534

   Job Description:

   Some times called plumber helper. Slips three wheel cutter over pipe, turns ratchet handle, and rotates pipe cutter around pipe until pipe is cut through. Files burr from end of pipe and cuts burr from inside of pipe using a hand reamer.

PLUMBING SUPPLY SYSTEM. A. Source of water, public or private, and piping up to house. B. Stop and waste valve should be at the low point of the whole system. C. Cold water main is any line serving two or more fixtures. D. Hot water main is any line serving two or more fixtures. E. Branch is any line serving just one fixture. F. Shut-off valve is needed in every branch line and in mains where cutoff might be needed. G. Use air chambers at every branch line before the fixture to prevent water hammer. H. Fixture supply pipe is part of the branch line that fits it to the fixture. Study the drawing. DRAINAGE SYSTEM. 1. Fixture drain incorporates a trap and leads into the branch waste. 2. Branch waste runs between the fixture and the main drain. 3. Main drain, or soil stack, collects water from the toilet and branch wastes. 4. Vent is the upper portion of the main drain. It reaches up through the roof. 5. Revent is a bypass for air between a branch waste and the vent portion of the main drain. 6. Cleanout opening should be located wherever access to the drainage system may be needed to rod out blockage. 7. Building drain leads from the main drain to the point of final disposal. 8. Final disposal is either a public sewage plant or a private disposal system.




TYPICAL MODERN HOUSE WATER SUPPLY AND WASTE DRAINAGE SYSTEM PIPING FOR A TWO STORY HOUSE
FLASHING AT ROOF
4" CAST IRON VENT STACK
1 1/2" VENT COULD JOIN MAIN STACK
TUB LAVATORY VENT
SECOND FLOOR BATHROOM
VENT INCREASER FOR EXTREME COLD AREAS
SHOWER AND TUB FIXTURES
1 1/2" VENT FOR KITCHEN AND BASEMENT WASHER
TAPPED TEE
TUB OVER FLOW
TUB DRAIN AND DRUM TRAP
TRAP
1/2" COPPER TUBING FOR ALL WATER LINES
ANTI-KNOCK CHAMBERS OPTIONAL
CLOSET BEND
FIRST FLOOR BATHROOM
DISH WASHER
SANITARY T-BRANCH
LAVATORY WOULD VENT INTO STACK HERE IF HOUSE IS ONE FLOOR
POSSIBLE VENT
1 1/2" DRAIN
TUB TRAP
TRAP
LAVATORY TRAP
1 1/2" TUB AND LAVATORY DRAIN (IN BASEMENT)
CLEAN OUT
SANITARY TEE
OUTDOOR SILL COCK
45° "Y"
CLOSET BEND
2" Y-BRANCH
COLD WATER TRUNK LINE
2" DRAIN
TRAP
VENT TO ROOF
HOT WATER PARALLELS IT
BASEMENT WASHER AND DRYER
RELIEF VALVE
WATER SUPPLY
(TEE FOR DARKROOM OR BAR)
2" BRANCH
HOT WATER TANK
MAIN CLEAN OUT
45° "Y" FOR BASEMENT TOILET
WATER METER AND SYSTEM SHUT OFFS
TO SEWER

EXPLORATION ACTIVITY #6

Heating and Cooling Systems (3 days)

OBJECTIVES	ACTIVITIES	RESOURCES
The student will be able to: 1. Recognize and contrast the different kinds of ductwork used in heating and cooling. 2. Identify and use basic tools for installing and maintaining heating and cooling systems. 3. Investigate and gather data from a resource man on mechanical controls, and discuss the opportunities for a career in this area. 4. Identify and examine filters used in heating and cooling.	1. Given tools and material along with a demonstration, the student will: a. layout, cut, bend, assemble, and install ductwork in the framed section. b. insulate one side (window side) with blanket insulation. 2. Invite a career man in heating and cooling controls to discuss with the students facts concerning: a. types of controls b. electrical components c. maintenance and adjustment d. operation e. careers f. wage rates for construction workers 3. Students will role play jobs on the attached pages. 4. Demonstrate and lecture using visuals on filters. Discuss the purpose of filters and the reason for changing them.	"The World of Construction" - Textbook, Lab Manual and Teacher's Guide - McKnight Publ. 1970 "Plumbing and Heating" Richard Day, Fawcett Publ. Co., Rockville, Md. 1970. Honeywell - 821-7410 Bill Sikute or Karen Vineyard See Appendix E.

ROLES AND JOB DESCRIPTIONS RELATED TO HEATING & COOLING SYSTEMS

1. Role: Heating Engineer (007.151) Pg. 356

   Job Description:

   Specializes in sale and installation of heating equipment. Analyses building properties to determine space to be heated and probable heat loss and gain under varying weather conditions.

2. Role: Heating Plant Superintendent (959.131) Pg. 356

   Job Description:

   Supervises and coordinates activities of workers engaged in producing and distributing steam heat and hot water in commercial or industrial establishments, and in maintaining mechanical equipment such as boilers, pipe systems, pumps, hot water furnaces and air-cooling units.

3. Role: Furnace Installer and Repairman (869.281) Pg. 370

   Job Description:

   Installs and repairs hot air furnaces, stoves, and similar equipment in accordance with diagrams and other specifications, using hand tools and pipe threading tools. Builds foundations; assembles and positions heating units; installs air ducts, smoke pipes, blowers and stokers.

4. Role: Air-conditioning Installer (827.884) Pg. 8

   Job Description:

   Installs domestic air-conditioning units, in private residences and business establishments. Inspects existing wiring and fuses on customer's premises to insure adequate power supply for operation.

5. Role: Air-conditioning Mechanic (637.281) Pg. 9

   Job Description:

   Services and repairs domestic air-conditioning units. Examines unit visually for defective parts. Listens to machine in operation for unusual noise. May dismantle part or whole machine and repairs or replaces such parts as: switches, relays, motors and other components. Replaces filters, lubricates unit and adjust controls.

6. Role: Air-conditioning Mechanic Helper (637.887) Pg. 9

   Job Description:

   Assists mechanic to repair, service, or install domestic air-conditioning unit.

7. Role: Insulation Installer (863.884) Pg. 388

Job Description:

Fastens sheets, bat, blanket, and similar types of building insulation to walls, floors, ceilings, and partitions to prevent or reduce passage of heat, cold or sound.

EXPLORATION ACTIVITY #7

Enclosing Walls - Exterior Walls (5 days)

OBJECTIVES	ACTIVITIES	RESOURCES
The student will be able to: 1. Identify and use the basic tools in enclosing exterior walls. 2. Recognize and cite evidence for enclosing a house with brick rather than aluminum siding or vice versa.	1. Given the proper equipment and supplies, the student will lay a corner and a partial brick wall. (Suggest 6 groups and dismantle and clean bricks at end of period.) 2. Demonstrate how to stucco on a 3' x 3' panel. 3. Tour of neighborhood observing various foundations and how masonry is used. Also note different house styles. 4. Enclose the exterior walls of the framed section with one of the following types of siding: a. wood b. vinyl c. aluminum 5. Students will role play the jobs described on the attached pages. Each student will experience each role at least once during this simulation.	"The World of Construction" - Textbook, Lab Manual, Teacher's Guide--McKnight Publ. 1970 "Careers in the Building Trades" Sidney H. Kasper, Henry Walck, Inc., NY, NY

ROLES AND JOB DESCRIPTIONS RELATED TO ENCLOSING EXTERIOR WALLS

1. Role: Bricklayer Foreman (861.131) Pg. 76

   Job Description:

   Supervises and coordinates activities of workers engaged in laying brick, tile, cinder-block, and other materials to construct or repair structures, such as walls, arches, sewers and partitions.

2. Role: Bricklayer (861.381) Pg. 76

   Job Description:

   Lays building materials, such as brick, structural tile, and concrete cinder, glass, gypsum and terra cotta block (except stone) to construct or repair walls, partitions, arches, sewers and other structures.

3. Role: Bricklayer Helper (861.887) Pg. 76

   Job Description:

   Assists bricklayer to build structures. Mixes mortar by hand or machine. Carries bricks and mortar by hand or wheelbarrow. Stacks bricks near bricklayer and moves mortar board at intervals to keep within easy reach of bricklayer.

4. Role: Hod Carrier (869.887) Pg. 360

   Job Description:

   Supplies bricklayer or stonemason with bricks, concrete or mortar using hod. Climbs ladder and walks along scaffold, when necessary, to reach workman. Cleans excess mortar from finished work, using brush or scrapping tool.

5. Role: Stucco Mason (842.381) Pg. 706

   Job Description:

   Applies weatherproof, decorative covering of cement or gypsum plaster to outside building surfaces. Erects scaffolds. Decorates final or finish coat by marking it with sand or with brush and trowel, or by splattering it with small stones.

6. Role: Stonemason (861.781) Pg. 698

   Job Description:

   Builds stone structures, such as piers, walls and abutments, or lays walks, curbstones or special types of masonry. Shapes stone preparatory to setting, using chisel, hammer and other shaping tools.

7. Role: Sider (863.884) Pg. 658

Job Description:

Applies asbestos, aluminum, pulpwood fiber, plastic panels, brick veneer, or porcelainized metal siding to building exteriors to provide decorative or insulating surfaces.

EXPLORATION ACTIVITY #8

Enclosing Walls - Interior Walls (4 Days)

OBJECTIVES	ACTIVITIES	RESOURCES
The Student will be able to: 1. Identify and use the basic tools in installing plasterboard. 2. Compare, in activity 2 and 3, two methods of finishing bathroom walls and then justify the two methods. 3. Classify and describe various roles in the construction industry.	1. Given the proper equipment and supplies, the student will apply plasterboard to the interior of the Framed Section. 2. Given the proper equipment and supplies, the student will apply a small section of tile on a simulated wall frame. 3. Given the proper equipment and supplies, the student will apply Marlite plastic paneling on a simulated wall frame. 4. List the workers shown in the film. Choose one career you would like to consider for future employment and give reasons for this selection. 5. Students will roll play the jobs described on the attached pages.	"The World of Construction" - Textbook, Lab Manual, Teachers' Guide, McKnight and McKnight, 1970. "Manual of Home Repairs, Remodeling and Maintenance," Grosset and Dunlap Pub. Co., N.Y., N.Y. 1969 "Build a Better Life" 16 mm film, 14 min. #4170 Modern Talking Picture Service. An illustration on finishing walls follows the roles.

ROLES AND JOB DESCRIPTIONS RELATED TO ENCLOSING INTERIOR WALLS

1. Role:

Dry Wall Applicator (842.884) Pg. 229

Job Description:

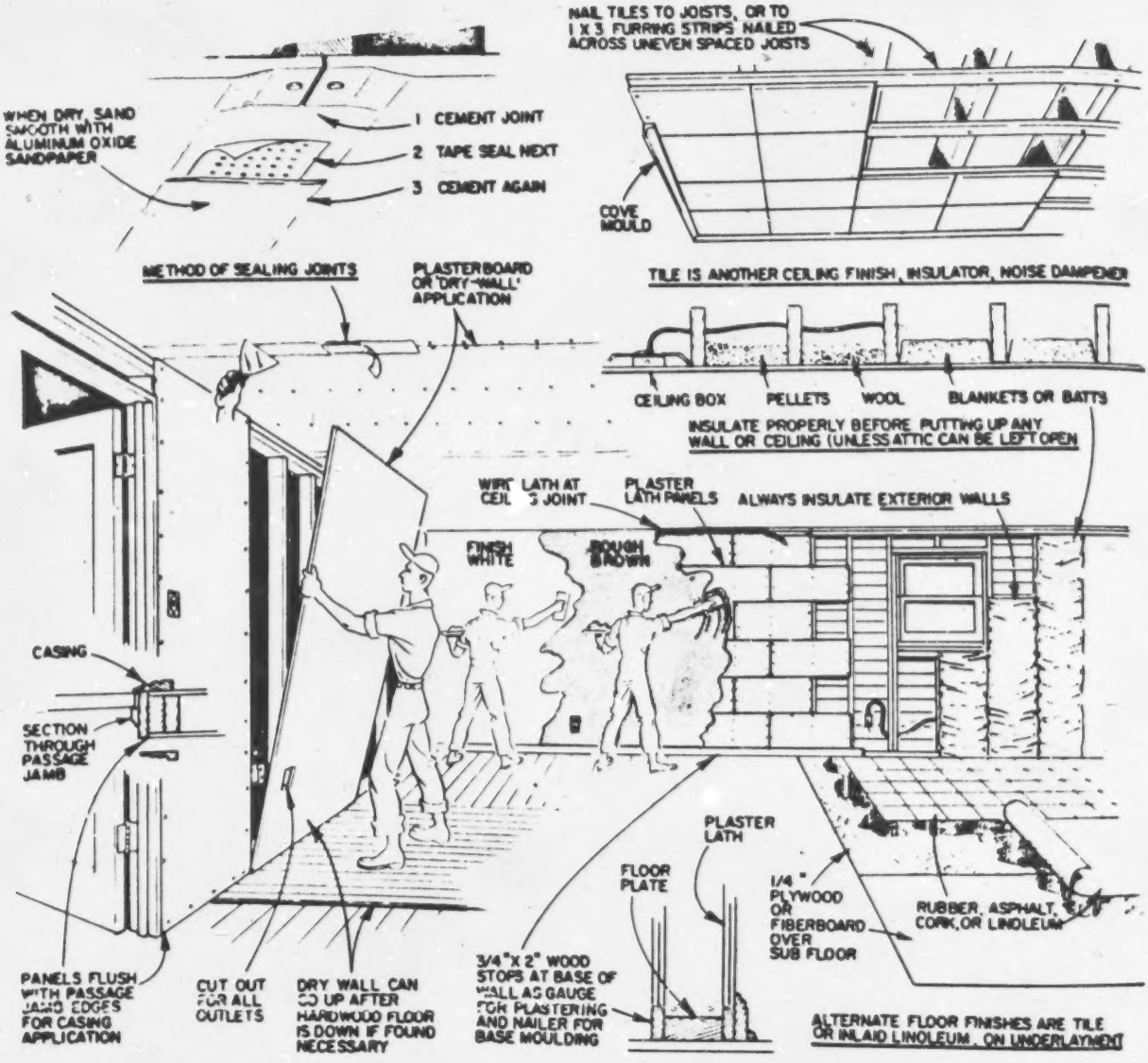
Applies plasterboard or other wallboard to ceiling and interior walls of building. Cuts and fits wallboard to studding and joists using hand tools.

2. Role:

Tile Setter (861.781) Pg. 738

Job Description:

Applies tile to walls, floors, ceiling and promenade roof decks. Examines blueprints, measures and cuts metal lath, tacks lath to wall. Spreads plaster base over lath, cuts and shapes tile with tile cutters and biters.


NAIL TILES TO JOISTS, OR TO 1 X 3 FURRING STRIPS NAILED ACROSS UNEVEN SPACED JOISTS
COVE MOULD
WHEN DRY, SAND SMOOTH WITH ALUMINUM OXIDE SANDPAPER
1 CEMENT JOINT
2 TAPE SEAL NEXT
3 CEMENT AGAIN
METHOD OF SEALING JOINTS
PLASTERBOARD OR 'DRY-WALL' APPLICATION
TILE IS ANOTHER CEILING FINISH, INSULATOR, NOISE DAMPENER
CEILING BOX
PELLETS
WOOL
BLANKETS OR BATTS
INSULATE PROPERLY BEFORE PUTTING UP ANY WALL OR CEILING (UNLESS ATTIC CAN BE LEFT OPEN
WIRE LATH AT CEIL'G JOINT
PLASTER LATH PANELS
ALWAYS INSULATE EXTERIOR WALLS
FINISH WHITE
SCRATCH BROWN
CASING
SECTION THROUGH PASSAGE JAMB
PLASTER LATH
FLOOR PLATE
1/4" PLYWOOD OR FIBERBOARD OVER SUB FLOOR
RUBBER, ASPHALT, CORK, OR LINOLEUM
PANELS FLUSH WITH PASSAGE JAMB EDGES FOR CASING APPLICATION
CUT OUT FOR ALL OUTLETS
DRY WALL CAN BE CUT UP AFTER HARDWOOD FLOOR IS DOWN IF FOUND NECESSARY
3/4" X 2" WOOD STOPS AT BASE OF WALL AS GAUGE FOR PLASTERING AND NAILER FOR BASE MOULDING
ALTERNATE FLOOR FINISHES ARE TILE OR INLAID LINOLEUM ON UNDERLAYMENT

EXPLORATION ACTIVITY #9

Maintaining and Servicing Outdoor Surfaces (5 Days)

OBJECTIVES	ACTIVITIES	RESOURCES
The student will be able to: 1. Describe the proper procedure in roofing a structure. 2. Perform tasks that are done by a landscaper or yardman. 3. Identify the nature of work of a concrete mason. 4. Justify the materials used in patching an asphalt surface. 5. List the steps in replacing a broken window. 6. Relate the role of washing windows in a skyscraper as opposed to a residence.	1. Given the proper equipment and supplies, the student will apply roof sheathing and shingles to the roof. 2. Given the proper tools and materials the student will: a. Trim shrubs around school. b. Apply fertilizer, using spreader, to certain areas of the school lawn. c. Plant various types of grass seed. d. Resod areas of school ground. e. Edge grass around sidewalks and driveways. f. Apply different types of mulching in flower beds and around shrubs. 3. Given the proper equipment and supplies the student will: a. Construct forms for a simulated 2'x2' block sidewalk. b. Set reinforcement wire. c. Mix the concrete. d. Place and finish the concrete. 4. Given the proper equipment and supplies, the student will patch existing holes in the parking area of school, and resurface a small portion of the lot. 5. Replace a broken window using the proper equipment and tools. 6. Given the proper equipment and supplies, the student will wash windows in the shop. 7. The students will role play the jobs described on the attached pages.	1. "Manual of Home Repairs, Remodeling and Maintenance, Grosset and Dunlap N.Y., N.Y. 1969 2. See school custodian. 3. "World of Construction" Textbook, Lab Manual. McKnight and McKnight 1970 4. Examples of concrete mix follows the roles.

ROLES AND JOB DESCRIPTIONS RELATED TO MAINTAINING & SERVICING OUTDOOR SURFACES

1. Role:

Roofer (866.381) Pg. 606

Job Description:

Covers roof with roofing materials, other than sheet metal, such as composition shingles or sheets, wood shingles, or asphalt and gravel, to make them waterproof.

2. Role:

Landscape Gardener (407.181) Pg. 411

Job Description:

Plans and executes small scale landscaping operations and maintains grounds and landscape of private and business residences. Participates with Landscape Laborer (407.887)-(Pg. 407) in preparing and grading terrain, applying fertilizer, seeding and sodding lawns, and transplanting shrubs and plants using manual and power operated equipment.

3. Role:

Yardman (304.887) Pg. 806

Job Description:

Performs any duty that has to do with keeping the grounds of a private residence in a neat and orderly condition.

4. Role:

Concrete Mixer Operator (570.885) Pg. 156

Job Description:

Tends mixing machine to mix sand, gravel and water to make concrete.

5. Role:

Cement Mason (844.884) Pg. 113

Job Description:

Smooths and finishes surfaces of poured concrete floors, walls, sidewalks, or curbs to specified textures, using handtools, including floats, trowels, and screeds.

6. Role:

Asphalt - Paving Machine Operator (853.883) Pg. 21

Job Description:

Drives machine that spreads and levels hot mix bituminous paving material on subgrade of highways, streets and driveways.

7. Role:

Glazier (865.781) Pg. 335

Job Description:

Installs glass in windows, skylights, storefronts and display cases or on surfaces such as building fronts, interior walls, ceilings, and table tops. May install metal windows and door frames into which glass panes are to be fitted.

8. Role:

Window Cleaner (389.987) Pg. 797

Job Description:

Cleans windows, glass partitions, mirrors, and all other glass surfaces of building interior or exterior, using a cleanser, sponge and squeege. May use safety belt for support.

THE RIGHT MIX

Kind of Work	Cement (sacks)	Sand (cu. ft.)	Gravel (cu. ft.)	Gallons of water per sack of cement if sand is: Damp	Wet	Very Wet	Maximum aggregate size
Footings, foundation walls (not watertight), columns, chimneys, retaining walls, garden walls.	1	3	5	7	6	5	1½"
	1	2¾-3	4	6¼	5½	4¾	1½"
Watertight basement walls, swimming and wading pools, walls above grade, walks, driveways, terraces, tennis courts, steps, floors, septic tanks, storage tanks.	1	2-2¼	3	5½	5	4¼	1"
	1	2½	3½	6½	5	4½	1½"
Subject to severe wear, weather, or weak acid and alkali solutions.	1	2	2¼	4½	4	3½	¾"
Topping for pavement, steps, tennis courts, floors.	1	1	1¾	4¾	4½	4¼	⅜"
Thin construction—2-4 inches Fence and mailbox posts, garden furniture, tanks, flower boxes, bird baths.	1	2	2	4½	3¾	3½	½"

EXPLORATION ACTIVITY #10

Maintaining and Servicing Indoor Surfaces (4 days)

OBJECTIVES	ACTIVITIES	RESOURCES
The Student will be able to: 1. Discuss the advantages and disadvantages of latex paint in comparison to enamel paint. 2. Demonstrate familiarity with and how to use hand and power tools in scrubbing and waxing floors. 3. Prepare a list of lighting fixtures that use bulbs or tubes in need of replacement. 4. Describe the five steps to follow in hanging wallpaper. 5. Recognize the principle ingredients of plaster and the purpose for each one.	1. Given the proper equipment and materials, the student will paint the interior walls and ceiling of the framed section. 2. Given floors in need of cleaning and the necessary hand and power tools, the students will scrub and wax the floors. 3. Given a variety of lighting fixtures, the corresponding bulbs or tubes and the necessary tools, the pupil will maintain optimum lighting by replacing burned out bulbs or tubes. 4. Given wallpaper catalogs, an assortment of wallpaper tools, paste, sizing, various types and styles of wallpaper the student will practice wallpapering on practice panels. 5. Given an assortment of manufacturers material and instructions, along with the proper tools, the student will plaster a section of a simulated wall frame. 6. The students will role play the jobs described on the attached pages.	1. "The Practical Handbook of Painting and Wallpapering," Morton Schultz, Arco Pub. Co. N.Y., N.Y. 1972 2. See Custodian 3. "Manual of Home Repairs, Remodeling and Maintenance," Grosset & Dunlop, N.Y., N.Y. 1969. 4. "Plastering, Skill, and Practice," Van Den Branden, Amer. Tech. Society Chicago, Ill. 1964, Pg. 45-76.

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ROLES AND JOB DESCRIPTIONS RELATED TO MAINTAINING AND REPAIRING INDOOR SURFACES

1. Role:

   Wall Washer (389.887) Pg. 779

   Job Description:

   Cleans interior walls and ceilings of offices, apartments, and other buildings by hand, using sponge and soapy water or chemical solution.

2. Role:

   Floor Finisher (864.884) Pg. 290

   Job Description:

   Performs variety of tasks to recondition wooden floors or prepare new floors for use. Scrapes and sands floors using sanding machine. Applies filler compound to seal wood. Applies wax to floor, polishing with electrical polisher.

3. Role:

   Maintenance Foreman (891.138) Pg. 441

   Job Description:

   Supervises and coordinates activities of workers engaged in keeping buildings and grounds in clean and orderly condition and in maintaining and repairing utility systems and physical structures of buildings.

4. Role:

   Maintenance Man, Building (899.381) Pg. 441

   Job Description:

   Repairs and maintains physical structures of commercial and industrial establishments such as factories, office buildings and apartments, using hand tools and power tools. Replaces defective electrical switches and other fixtures.

5. Role:

Painter (840.781) Pg. 509

Job Description:

Applies coats of paint, varnish, stains, enamel, or lacquer to decorate and protect interior or exterior surfaces, trimmings, and fixtures of buildings, and other structures.

6. Role:

Paperhanger (841.781) Pg. 515

Job Description:

Covers interior walls and ceilings of rooms with decorative wallpaper or fabric. May remove old paper using water or chemical remover and scraper.

7. Role:

Janitor (382.884) Pg. 392

Job Description:

Keeps hotel, office building, apartment house, or similar building in clean and orderly condition. Sweeps and mops or scrubs hallways and stairs. Empties trash and garbage containers. Cleans snow and other debris from sidewalks.

8. Role:

Plasterer (842.781) Pg. 538

Job Description:

Applies coats of plaster to interior walls, ceilings and partitions of buildings to produce finished surface, according to blueprints, architect's drawings or oral instructions. Directs workers to mix plaster to desired consistency, spreads plaster, applies scratch brown or finish coats.

EXPLORATION ACTIVITY #11

Conclusion of Building and Maintenance Activities (1 day)

OBJECTIVES	ACTIVITIES	RESOURCES
The student will be able to: 1. Inspect the framed section, noting good and bad features in the construction. 2. Devise a method to compute the cost of the framed section. 3. Analyze plans for selling an item.	1. Given the finished product, namely the utility shed, evaluate by inspection the construction in terms of completeness, accuracy, and aesthetic qualities. 2. Given the framed section, the student will organize all data for the purpose of calculating the cost of the unit. 3. The student will devise a plan to sell the framed section.	

EXPLORATION ACTIVITY #12

Individual Student Exploration into Related Careers. Because of the multiplicity of careers in this occupational area, many have been left untouched in this curriculum guide. In this exploration activity, the students can explore a related career of their choice. There are a number of related careers which are the major subject of other curriculum guides.

OBJECTIVES	ACTIVITIES	RESOURCES
The student will be able to: 1. Identify and explore at least one additional career related to their individual interests and this occupational area. 2. Locate and record specific information related to a career of individual interest to him.	Each student selects and explores a career or job which is related to both his individual interest and the occupational area described in this curriculum guide. The students are to use career information reference located in the class room, school library, public library, their homes and community as resources to complete an "Individual Career Exploration Worksheet" which is attached.	Dictionary of Occupational Titles, Volumes I & II. Occupational Outlook Handbook 1972-73 Ed. Encyclopedia of Careers and Vocational Guidance Volumes I & II (Doubleday) Largo or SRA Career Kits Make a class set of the "Individual Career Exploration Worksheet"

INDIVIDUAL CAREER EXPLORATION WORKSHEET

1. Student's Name: _____

2. Related careers being explored:

   a. D.O.T. Number(s) _____

   b. Relationship to:

      1. Data _____

      2. People _____

      3. Things _____

3. Nature of duties or tasks performed:

   _____

   _____

   _____

4. Important qualifications

   a. Education _____

   b. Age _____

   c. Previous experience _____

   d. Other _____

5. Procedure for applying

   _____

   _____

   _____

6. In what occupational areas is this related career found? (If many, list 3 specific areas.)

   _____

   _____

   _____

7. What is the salary for this career?

   a. Starting _____

   b. Maximum _____

8. Are there chances for advancement? Name several promotional positions.

_____

_____

_____

9. Are there places in Cincinnati where you could work in this career?

_____

_____

_____

10. Name one or two resource people that you could write or phone for more information.

_____

_____

11. Are there places that you or a small group of students could visit to observe your career?

_____

_____

_____

12. Are there any books in the school library on this related career?

_____

_____

13. What can you do in high school to learn about and prepare for the career of your choice?

a. _____ d. _____

b. _____ e. _____

c. _____ f. _____

EXPLORATION ACTIVITY #13 (2 Days Suggested)

Student Self Evaluation of Career Maturity

This activity is planned to help the students analyze and learn to value their career-related experiences and the level of their career maturity.

Seven areas of growth and development which have been identified for this use are as follows:

1. Individual and Environment (Social Awareness)
2. Economics
3. World of Work
4. Education and Training
5. Employability and Work Adjustment Skills
6. Vocational Decision Making
7. Self (Self-Awareness)

OBJECTIVES	ACTIVITIES	RESOURCES
The student will be able to: - Respond, in a purposeful and business-like manner, to one or more questions which ask the student to analyze their experiences in each of the developmental areas.	Each student is asked to seriously consider their career related experiences. A brief class discussion and/or small group discussions may be used to introduce this topic. The students should view the films "What Do We Look Like to Others" and "I Want to Work For Your Company" If these films have been viewed previously they should be reviewed and discussed. Following a review of these films each student is asked to respond to a set of self-analysis questions prepared by the teacher. To help the teacher in preparing these questions a definition of each developmental area and sample questions for each area are attached to this sheet.	The teacher will need to generate class sets of questions. These two films are available from Resource Services on Iowa Street.

DEFINITIONS OF DEVELOPMENTAL AREAS

Individual and Environment (Social Awareness)

In this area of the student's development, the student must determine who he is and how he relates to his environment. He must be involved in experiences which will help him to determine his relative abilities to work with people, to manipulate tools, to sense his presence in his environment, and to comprehend laws of nature and the processes for behavioral advancements within his community.

The student will be involved with understanding his interests, aptitudes, achievements, temperament, his family peers, his society, and etc.

Economics

Students must learn to see themselves as a productive worker unit who supports his community through efficient positive efforts as a producer and consumer. He must learn that the money he receives for his work is an important factor in determining the behavior of his community through the way in which he spends his money; the way in which he is willing to work for his money; and how this spending gives direction to the use of raw materials for production and consumption of goods and services to be used in his community.

The student must learn what is meant by a fair day's pay for a fair day's work and the implied obligations between the consumers and producers.

World of Work

This area is concerned with the student's development of a method for collecting information about jobs. It also is concerned with the student developing an understanding of what behavior is required to do certain jobs. Examples of job information include, in part, the following items:

Job entry levels
Performance activities
Working conditions

Education and training requirements
Availability of jobs
Seasonality of jobs
Job status
Advancement possibilities

Education and Training

The student must learn what behavior modifications (education and training) will be expected of him for certain jobs. In doing so he will learn the innate abilities he has and if these abilities can be developed to the level required to perform certain jobs he chooses for his vocation.

Students must learn which educational programs will help them to acquire the experience that will help them to develop the performance behavior required for certain jobs.

Employability and Work Adjustment Skills

This section is concerned with attitude strategies and the importance of the development of successful attitude strategies which are necessary for continued economic gains.

Students must learn how good attitudes are a contribution to their own adjustment and success as well as the success of their community. People are dismissed from their jobs more often because they cannot get along with people than they are because they do not have the skills for their jobs.

Vocational Decision Making

Students must learn a method for making decisions if they are to become employable and well adjusted citizens. They must learn to gather facts about themselves, jobs, and values and how to weigh this information to reach a conclustion as to what work they are able to do and what work they want to do.

Self

In this area the Self as subject is the major focus. Self as subject requires that the person's own feelings, perceptions and beliefs are dealt

with. This requires an internal orientation to the activities as opposed to the external orientation of activities for the other areas.

Seven topics are developed in the broad area SELF. These trace self-awareness, self-acceptance and self-affirmation of the child through interests, aptitudes and abilities, achievement and values and attitudes.

SAMPLE QUESTIONS FOR CAREER MATURITY

Listed on this page are sample questions related to areas of growth and development.

1. Self and Environment

   - What things have I done with any degree of success?
   - What things have I done that others have commended me for doing exceptionally well?

2. Economics

   - How much money have I earned?

3. World of Work

   - What jobs have I held? Describe them in detail.

4. Education and Training

   - What courses have I taken that would prepare me for an entry job position?

5. Employability and Work Adjustment Skills

   - What were the expectations of employers concerning the job I have held?

6. Vocational Decision Making

   - Where could I get additional information about jobs and careers?

7. Self

   - What are the things I really like to do?
   - What are the things that I don't like to do?

III. APPENDIX

A. Field Trips in Career Development

B. Procedure for Exploration Trips

C. Exploration Trip Permission Form

D. Exploration Trip Report

E. Wage Rates for Construction Workers

FIELD TRIPS IN CAREER DEVELOPMENT

General Student Needs

1. Field trips commonize the background of the students so that there is a basis from which to develop a strong well-rounded instructional program.

2. Because the student is so far removed from his potential career, he needs a broad understanding and exposure to work.

3. Broad off-school-site experiences build readiness for learning by demonstrating that basic skills are essential to a productive work-life.

4. To thoroughly understand a career, the student needs to see the job first hand.

5. Students may not realize all the implications/facets of an occupation in terms of personal interests until they have an exposure to the worker in action.

6. Omission of hands-on experiences may cause a lack of credibility in those courses taught, in the upper levels.

7. While field trips benefit the student, they also benefit the teacher, who, without their assistance, is required to serve as expert on the details of many careers which are not necessarily related to his own speciality.

8. Field trips, when used correctly, can be a source of creating better communication and understanding between business, labor and industry in the community and the school.

Specific Student Needs

Field Trips will do the following:

1. Develop an appreciation/awareness that an individual's skills, talents and senses are used in a variety of ways.

2. Develop an awareness of the importance of responsibility and attitude for one's work.

3. Encourage the development of communication skills. Broad off-school-sites experiences demonstrate need and provide motivation for skill learnings.

4. Develop an awareness of the interdependence of the student and all workers.

5. Develop an awareness that there are many people who have different responsibilities in business, labor and industry.

6. Develop an awareness that workers are not necessarily associated with or limited to a specific location and an understanding that there are many kinds of work within specific sites/fields.

GUIDELINES FOR IMPLEMENTATION OF FIELD TRIPS IN CAREER DEVELOPMENT

1. The local administrator is responsibile for observance of the guidelines by participating staff members.

2. The local administrator should take responsibility for appointing a person to finalize field trip arrangements.

3. There should be planning of each trip well in advance.

4. Teachers should make field trip plans in consideration of/consultation with other teachers who have a teaching responsibility for the pupils.

5. For the convenience of the faculty, field trip information should be given out several days in advance including destination, length of time out of school, and students participating.

6. The teachers should be aware/appreciative of the expense of the trip to the business or industry in relation to the time spent hosting visitors.

7. Teachers should justify the trip in relation to their instructional program.

8. Teachers who desire to take a particular field trip should plan the trip together, although they may not go together.

9. The faculty of each school may prepare a list of meaningful walking trips utilizing the resources of the local community.

10. After the arrangements have been made, and before the trip, there should be communication between the teacher and the contact person at the place where they are going to clarify teacher expectations.

11. Students should be adequately supervised not only for their safety, but to minimize the interruption to business or industry.

12. There should be well planned pre- and post-activities for each trip.

13. After each trip, there should be a note of appreciation to the business or industry. The teacher may communicate the extent to which expectations were met.

14. A follow-up report concerning the value of the trip and results relating to the specific reason for the trip should be submitted to the administrator/coordinator.

15. Identify the businesses and industries of the Cincinnati community that have only one representative (i.e. the phone company) and those businesses and industries that have multiple representatives in this community (i.e. bakeries, garages).

16. To avoid overloading of limited field trip sites, and to maintain privileges, it is necessary to clear requests for these trips through a central clearing office to be designated by Jack Ford.

17. Teachers may build a list of trips and experiences that parents could provide for their children outside of school hours.

PROCEDURE FOR EXPLORATION TRIPS

SCHEDULE CONSIDERATIONS:

An opportunity is to be provided for students to visit cooperating organizations in small groups for a highly personalized and individualized experience directly related to their career interests. It is essential to minimize the burden on cooperating organizations and to distribute this burden among all community resources and throughout the school year. To accomplish this, trips must be scheduled from the beginning of the school year, and be evenly spaced during the year until every student has been accomodated. The students in a quarter length exploration class may, therefore, participate in an exploration trip prior to, during, or following the time that the course is in progress.

PROCEDURES:

Once each month, or even less frequently, the teacher will need to:

1. Place a single phone call to a cooperating organization to set the date and time for the trip.

2. Notify Mr. Jerome Couzins (Education Center, 230 East Ninth St.) of the date and time for the trip.

3. Select six students from the Career Exploration class list.

4. Send permission slips and trip report forms to the selected students via their homerooms.

Permission slips and report forms are illustrated on the following pages. These forms should be reproduced from this curriculum guide as required.

The career committee chairman or coordinator will provide you with a list of organizations which are known to be willing and able to accommodate your students. Addresses, phone numbers and names of persons to contact will be provided.

CAREER EXPLORATION TRIP PERMISSION FORM

You are schedule for _____ (Career Course Title) which meets 1-2-3-4 quarter. Exploration trips will be scheduled throughout the year regardless of whether the course is in session.

A trip has been schedule for _____ (Date) to _____ (Name of Company) Please have this form signed and return to _____ (Teacher's Name) _____ (Room) before _____ (Date).

My son/daughter _____ has my permission to visit _____ on _____ with the Career Exploration Course _____. The group will return to school upon completion of the tour. There will be about six students in each group.

_____
Parent/Guardian Signature

_____
Date

The following teachers have been informed of my absence from class. (Teachers' signatures required.)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

EXPLORATION TRIP REPORT

1. Course Title _____

2. Student's Name _____

3. Organization or Company _____

   Address _____

   _____

4. Major Products or Service:

   1. _____ 4. _____

   2. _____ 5. _____

   3. _____ 6. _____

5. Major Types of Jobs:

   1. _____ 4. _____

   2. _____ 5. _____

   3. _____ 6. _____

6. What did you like best about this trip?

   _____

   _____

   _____

7. Did you see any jobs that you would like to do? List them.

   _____

   _____

8. What did you learn from this tour?

   _____

   _____

_____
Signature
Representative of Organization
Visited

Wage Rates — JOURNEYMEN and SUPERVISORY — Additive Fringe Issues — Cincinnati, Ohio

Name of Craft	Effective Dates of Agreements From	To	Journeyman	Foreman	Master Mechanic	Area Foreman	General Foreman	Health & Welfare	Pension	Apprentice Fund	Promotion Fund	Construction Advancement Program	S. U. B.
Asbestos Workers	9- 5-72	6- 1-73	9.21	...	...	...	...	.30	.50	.02	..	..	..
** Boilermakers	10- 1-72	10- 1-73	8.10	8.60	...	...	9.10	.40	.60	.01	..	..	..
Bricklayers	6- 1-72	6- 1-73	9.395	9.645	...	...	9.895	.45	..	..	.03	.025	..
Carpenters	6- 1-72	6- 1-73	8.70	9.25	...	...	9.60	.40	.55	.025	..	.025	..
Cement Masons	7- 1-72	6- 1-73	8.845	9.095	...	...	9.345	.30	.50	.02	..	.025	..
Electricians–Local zone	6- 5-72	6- 1-73	8.75	9.63	...	...	10.50	.30	.30 & 1%	½%	..	..	20
***Elevator Constructors	8-16-72	Indef.	8.68	9.765	...	...	...	.345	.23	.015	..	..	..
Engineers – Building													
Class A	5- 1-73	5- 1-74	8.95	...	9.47	...	...	.42	.80	.11	.03	.025	..
Class B	5- 1-73	5- 1-74	8.79	...	9.47	...	...	.42	.80	.11	.03	.025	..
Class C	5- 1-73	5- 1-74	8.63	...	9.47	...	...	.42	.80	.11	.03	.025	..
Class D	5- 1-73	5- 1-74	7.95	...	9.47	...	...	.42	.80	.11	.03	.025	..
Class E	5- 1-73	5- 1-74	7.62	...	9.47	...	...	.42	.80	.11	.03	.025	..
Class F	5- 1-73	5- 1-74	6.97	...	9.47	...	...	.42	.80	.11	.03	.025	..
Glaziers	11-25-72	3- 9-73	8.70	...	...	...	...	..	.25	.005	..	..	..
Glaziers	3- 9-73	11-25-73	8.70	...	...	...	...	..	.35	.005	..	..	..
Hodcarriers	9- 1-72	6- 1-73	7.80	8.05	...	...	...	.35	.20	..	..	..	..
Iron Workers	6- 1-72	6- 1-73	8.995	9.345	...	...	9.745	.40	.55	.015	..	.025	..
Laborers – Bldg.	9- 1-72	6- 1-73	7.60	7.85	...	...	...	.35	.20	..	..	..	..
Laborers – Wrecking	9- 1-72	6- 1-73	7.32	...	...	...	...	.35	.20	..	..	..	..
Lathers	6- 1-72	6- 1-73	9.495	9.745	...	...	...	..	..	.015	.11	.025	..
Marble Setters	6- 1-72	6- 1-73	9.135	9.635	...	...	...	.45	..	..	..	..	..
Marble Helpers	6- 1-72	6- 1-73	8.285	...	...	...	...	..	..	..	..	..	..
Millwrights	6- 8-72	6- 1-73	9.29	9.79	...	9.89	10.14	.30	.25	.03	..	.025	..
Painters–Residential	9- 1-72	6- 1-73	7.83	8.08	...	...	...	.35	.15	..	..	..	..
Painters–Commercial	9- 1-72	6- 1-73	8.03	8.28	...	...	...	.35	.15	..	..	..	..
Painters–Industrial	9- 1-72	6- 1-73	8.18	8.43	...	...	...	.35	.15	..	..	..	..
Pipefitters	6- 1-72	6- 1-73	8.81	9.31	...	9.81	10.31	.40	.775	.04	.04	..	.20
Plasterers	6- 1-72	6- 1-73	9.245	9.495	...	...	...	..	.30	.01	.11	.025	..
Plumbers	6- 1-72	6- 1-73	9.055	9.555	...	...	10.055	.38	.65	.05	.08	..	..
Resilent Floor Layers	8-15-72	8-15-73	7.65	...	...	...	...	.40	.55	.05	..	..	..
Rodmen – Reinforcing	6- 1-72	6- 1-73	8.695	9.095	...	...	...	.40	.85	.02	..	.025	..
Roofers	6- 1-72	6- 1-73	9.395	9.645	...	...	...	..	.30	..	..	.025	..
Sheet Metal	6-27-72	6- 1-73	8.525	8.775	...	...	...	.40	.70	.02	.09	..	..
* Sheet Metal	6- 1-73	6- 1-74	8.775	9.025	...	...	...	.40	.70	.02	.09	..	..
Stone Masons	6- 1-72	6- 1-73	9.135	9.385	...	...	9.635	.45	..	..	..	..	..
Terrazzo Workers	6- 1-72	6- 1-73	9.085	9.535	...	...	...	.45	..	..	..	.025	..
Terrazzo Helpers	6- 1-72	6- 1-73	8.235	...	...	...	...	..	..	..	..	..	..
Tile Helpers	6- 1-72	6- 1-73	8.185	...	...	...	...	..	..	..	..	..	..
Tile Setters	6- 1-72	6- 1-73	9.085	9.535	...	...	...	.45	..	..	..	.025	..

Notice: For supplementary information see article headed Notice To Users Of Wage Chart on Page 10.

* Sheet Metal Contract Provides Increase effective June 1, 1973 based upon change in Cost of Living Index with minimum increase of 25¢. Rate shown reflects 25¢ increase.

** Boilermakers agreement in addition to listed rates provides for a 55¢ an hour employer contribution to the Savings Fund.

*** Elevator Constructors – in addition to rates listed employers pay for Vacation based on employee's wage rate 2% for men with under 5 years experience, 4% for men with over 5 years, and 2% for Supplemental Vacation on all eligible employees.